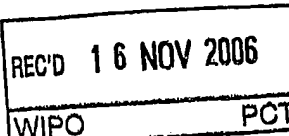


# PATENT COOPERATION TREATY

## PCT

### INTERNATIONAL PRELIMINARY REPORT ON PATENTABILITY (Chapter II of the Patent Cooperation Treaty)

(PCT Article 36 and Rule 70)



Applicant's or agent's file reference 9739-51	FOR FURTHER ACTION		See Form PCT/IPEA/416
International application No. PCT/US05/10066	International filing date (day/month/year) 24 March 2005 (24.03.2005)	Priority date (day/month/year) 24 March 2004 (24.03.2004)	
International Patent Classification (IPC) or national classification and IPC IPC: E04B 1/00( 2006.01), 1/16( 2006.01); B29C 73/00( 2006.01), 73/30( 2006.01) USPC: 264/35, 36.18, 36.22; 156/94; 52/742.13			
Applicant WILLAMETTE VALLEY COMPANY			
<p>1. This report is the international preliminary examination report, established by this International Preliminary Examining Authority under Article 35 and transmitted to the applicant according to Article 36.</p> <p>2. This REPORT consists of a total of <u>2</u> sheets, including this cover sheet.</p> <p>3. This report is also accompanied by ANNEXES, comprising:</p> <p>a. <input type="checkbox"/> (sent to the applicant and to the International Bureau) a total of <u>3</u> sheets, as follows:</p> <p><input type="checkbox"/> sheets of the description, claims and/or drawings which have been amended and are the basis of this report and/or sheets containing rectifications authorized by this Authority (see Rule 70.16 and Section 607 of the Administrative Instructions).</p> <p><input type="checkbox"/> sheets which supersede earlier sheets, but which this Authority considers contain an amendment that goes beyond the disclosure in the international application as filed, as indicated in item 4 of Box No. I and the Supplemental Box.</p> <p>b. <input type="checkbox"/> (sent to the International Bureau only) a total of (indicate type and number of electronic carrier(s)) _____, containing a sequence listing and/or tables related thereto, in electronic form only, as indicated in the Supplemental Box Relating to Sequence Listing (see Section 802 of the Administrative Instructions).</p>			
<p>4. This report contains indications relating to the following items:</p> <p><input checked="" type="checkbox"/> Box No. I Basis of the report</p> <p><input type="checkbox"/> Box No. II Priority</p> <p><input type="checkbox"/> Box No. III Non-establishment of opinion with regard to novelty, inventive step and industrial applicability</p> <p><input type="checkbox"/> Box No. IV Lack of unity of invention</p> <p><input checked="" type="checkbox"/> Box No. V Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability, citations and explanations supporting such statement</p> <p><input type="checkbox"/> Box No. VI Certain documents cited</p> <p><input type="checkbox"/> Box No. VII Certain defects in the international application</p> <p><input type="checkbox"/> Box No. VIII Certain observations on the international application</p>			
Date of submission of the demand 17 October 2005 (17.10.2005)		Date of completion of this report 30 September 2006 (30.09.2006)	
Name and mailing address of the IPEA/ US Mail Stop PCT, Attn: IPEA/US Commissioner for Patents P.O. Box 1450 Alexandria, Virginia 22313-1450 Facsimile No. (571) 273-3201		Authorized officer Matthew J. Daniels Jean Proctor Paralegal Specialist Telephone No. (571) 272-1100	

Form PCT/IPEA/409 (cover sheet) (April 2005)

# INTERNATIONAL PRELIMINARY REPORT ON PATENTABILITY

International application No.

PCT/US05/10066

## Box No. I Basis of the report

1. With regard to the language, this report is based on:

- ☐ the international application in the language in which it was filed.
- ☐ a translation of the international application into \_\_\_\_\_, which is the language of a translation furnished for the purposes of:
- ☐ international search (under Rules 12.3 and 23.1(b))
- ☐ publication of the international application (under Rule 12.4(a))
- ☐ international preliminary examination (under Rules 55.2(a) and/or 55.3(a))

2. With regard to the elements of the international application, this report is based on *(replacement sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this report as "originally filed" and are not annexed to this report)*:

- ☐ the international application as originally filed/furnished
- ☒ the description:
- pages 1-11 as originally filed/furnished
- pages\* NONE received by this Authority on \_\_\_\_\_
- pages\* NONE received by this Authority on \_\_\_\_\_
- ☒ the claims:
- pages NONE as originally filed/furnished
- pages\* NONE as amended (together with any statement) under Article 19
- pages\* 12-14 received by this Authority on 17 October 2005 (17.10.2005)
- pages\* NONE received by this Authority on \_\_\_\_\_
- ☐ the drawings:
- pages NONE as originally filed/furnished
- pages\* NONE received by this Authority on \_\_\_\_\_
- pages\* NONE received by this Authority on \_\_\_\_\_
- ☐ a sequence listing and/or any related table(s) - see Supplemental Box Relating to Sequence Listing

3. ☐ The amendments have resulted in the cancellation of:

- ☐ the description, pages \_\_\_\_\_
- ☐ the claims, Nos. \_\_\_\_\_
- ☐ the drawings, sheets/figs \_\_\_\_\_
- ☐ the sequence listing (*specify*): \_\_\_\_\_
- ☐ any table(s) related to the sequence listing (*specify*): \_\_\_\_\_

4. ☐ This report has been established as if (some of) the amendments annexed to this report and listed below had not been made, since they have been considered to go beyond the disclosure as filed, as indicated in the Supplemental Box (Rule 70.2(c)).

- ☐ the description, pages \_\_\_\_\_
- ☐ the claims, Nos. \_\_\_\_\_
- ☐ the drawings, sheets/figs \_\_\_\_\_
- ☐ the sequence listing (*specify*): \_\_\_\_\_
- ☐ any table(s) related to the sequence listing (*specify*): \_\_\_\_\_

*\* If item 4 applies, some or all of those sheets may be marked "superseded."*

## INTERNATIONAL PRELIMINARY REPORT ON PATENTABILITY

International application No.  
PCT/US05/10066**Box No. V** Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

## 1. Statement

Novelty (N)	Claims <u>1-21</u>	YES
	Claims <u>NONE</u>	NO
Inventive Step (IS)	Claims <u>NONE</u>	YES
	Claims <u>1-21</u>	NO
Industrial Applicability (IA)	Claims <u>1-21</u>	YES
	Claims <u>NONE</u>	NO

2. Citations and Explanations (Rule 70.7)  
Please See Continuation Sheet

INTERNATIONAL PRELIMINARY REPORT ON PATENTABILITY

International application No.  
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Supplemental Box

In case the space in any of the preceding boxes is not sufficient.

Continuation of:

V. 2. Citations and Explanations:

NOVELTY

Claims 1-21 meet the criteria set out in PCT Article 33(2), because none of the prior art singularly teaches each and every limitation of the claims.

INVENTIVE STEP

Claims 1-21 lack an inventive step under PCT Article 33(3) as being obvious over U.S. Patent No. 5,173,222 (YOUNG et al) in view of U.S. Patent No. 4,716,210 (TRUMMELMEYER et al) as evidenced by French Publication No. FR 2734848 A1 (CHANEL).

Claims 1-3, 6, 7, 11-13, 16, 18 and 21

YOUNG et al teach a method for repairing rail ties (a method for restoring a damaged rail seat located on a concrete rail tie) including placing an application apparatus over a rail seat 4 on a rail tie 1; filling the worn recess 5 in the rail seat 4 with an abrasion resistant composition (applying a polymeric material to the damaged rail set located on the concrete rail tie); and rapidly curing the abrasion resistant composition in-situ with a hot box device 10 (restoring the damaged rail seat by curing the polymeric material) (column 2, line 52 - column 4, line 21). One of ordinary skill in the art would have obviously recognized that the claimed properties of restored rail seat would have naturally flowed from the claimed process and the claimed materials used in the claimed process. Since YOUNG et al in view of TRUMMELMEYER et al provides the same process and uses the same materials as the claimed, one of ordinary skill in the art would have obviously recognized, with all things being equal, that the process of YOUNG et al in view of TRUMMELMEYER et al would have produced a restored rail seat having the claimed properties.

Although YOUNG et al teach the basic claimed process, YOUNG et al do not specifically teach that the polymeric material

## Supplemental Box

comprises a poly(urethane-urea) material; that the polymeric material can be cured under ambient temperature and pressure conditions, such as "as low as" 45 degrees F; that the polymeric material is substantially sag resistant and maintains its shape without substantial runoff from the concrete rail tie during the restoring process; and that the set time of the polymeric material is sufficient for contouring the restored rail seat in situ without requiring the use of non-ambient heating. However, these limitations would have been obvious in view of the teachings of TRUMMELMEYER et al and CHANEL as discussed more extensively hereafter.

TRUMMELMEYER et al teach a polyurethane-urea material (a polymeric material comprising poly(urethane-urea) material) for forming elastomeric coatings on plastics, foams, natural stone, screed surfaces and concrete that shows very rapid gelation, cold-hardening (curing the polymeric material under ambient temperature and pressure conditions; curing the polymeric material under ambient temperature and pressure conditions, at a temperature as low as 45°F; without requiring the use of non-ambient heat and pressure; the set time of the polymeric material is sufficient for contouring the restored rail seat in situ without requiring the use of non-ambient heat), eminently suitable for corrosion-inhibiting and wear-resistant coatings, capable of seamlessly and evenly covering and filling cracks in substrates and applied by spraying, casting, or the like without the formation of "teardrops" during the hardening phase (the polymer material being substantially sag resistant and maintaining its shape without substantially runoff from the concrete rail tie during said restoring of the damaged rail seat) (column 1, lines 11-22; column 3, lines 6-10 and 17-27; column 8, lines 17-46). CHANEL teaches a rail track sealing and wedging composition comprising a copolymer epoxy-urethane-urea resin base (Derwent Abstract); therefore, CHANEL provides evidence that it was known in the art at the time of the applicant's invention to use urethane-urea compositions for repairing rail ties. Thus, it would have been prima facie obvious to one of ordinary skill in the art at the time the invention was made and one of ordinary skill would have been motivated to use a poly(urethane-urea), abrasive-resistant composition having the claimed properties as the abrasive composition in the process of YOUNG et al as taught by TRUMMELMEYER et al and as evidenced by CHANEL to provide an abrasive-resistance composition that was capable of cold hardening thereby eliminating the need for the hot box device.

Claims 4, 5, 14 and 15

The discussion of YOUNG et al, TRUMMELMEYER et al and CHANEL as applied to claims 1 and 11 above applies herein. YOUNG et al do not specifically teach that the gel time of the polymeric material is not more than about five seconds, preferably not more than one second. However, TRUMMELMEYER et al further teach polyurethane-urea material hardens about 10 to 12 sections after discharge (the gel time of the polymeric material is not more than about five seconds; the gel time of the polymeric material is not more than about one second) (column 8, lines 17 and 18). Note that one of ordinary skill in the art, based upon the available knowledge in the polymer gelling art, would have considered a gel time of about 10 seconds to be readable on the claimed gel times even though the ranges do not overlap. It would have been prima facie obvious to one of ordinary skill in the art at the time the invention was made and one of ordinary skill would have been motivated to use a poly(urethane-urea), abrasive-resistant composition having the claimed properties as the abrasive composition in the process of YOUNG et al as taught by TRUMMELMEYER et al and as evidenced by CHANEL to provide an abrasive-resistance composition that was capable of cold hardening thereby eliminating the need for the hot box device.

Claims 8-10 and 17, 19, and 20

The discussion of YOUNG et al, TRUMMELMEYER et al and CHANEL as applied to claims 1 and 11 above applies herein. Neither YOUNG et al nor TRUMMELMEYER et al specifically teach that the restored rail seat has the claimed properties (e.g., maintenance of rail gauge under dynamic operating conditions, increased modulus, elongation, Shore D (24 hour) hardness, etc.) after restoration. However, in this regard, one of ordinary skill in the art would have obviously recognized that the claimed properties of restored rail seat would have naturally flowed from the claimed process and the claimed materials used in the claimed process. Since YOUNG et al in view of TRUMMELMEYER et al provides the same process and uses the same materials as the claimed, one of ordinary skill in the art would have obviously recognized, with all things being equal, that the process of YOUNG et al in view of TRUMMELMEYER et al would have produced a restored rail seat having the claimed properties.

## INDUSTRIAL APPLICABILITY

Claims 1-21 meet the criteria set out in PCT Article 33(4), and thus claims 1-21 have industrial applicability because the subject matter claimed can be made or used in industry.

## RESPONSE TO ARGUMENTS

Applicant's remarks filed on 17 October 2005 argue the following points:

- a) The polymeric material of Young is not substantially sag resistant
- b) Trummelmeyer does not teach restoring damaged rail seats, the formation of a sag resistant gel, or maintaining the shape without substantial runoff.
- c) Trummelmeyer teaches a material of a lower modulus.
- d) Trummelmeyer teaches only room temperature, and not as low as 45 degrees F
- e) The connection between Trummelmeyer and Chanel is not taught or suggested.

These arguments are not persuasive for the following reasons:

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Supplemental Box

- a) Young teaches a paste (3:2), which is interpreted to be sag resistant. Additionally, in the combination of the methods cited, the same claimed composition is taught by the reference and must have therefore also been sag resistant.
- b) Young teaches the restoring, and replacement or interchangeability of compositions for achieving the best result would have been obvious and within the ordinary level of skill in the art. The claimed process is disclosed by Young, and for the reasons cited above, it would have been obvious to replace the composition.
- c-e) The connection between Trummelmeyer and Chanel need not be taught, and is relied upon only for teaching that it is conventional to replace or interchange the compositions used in repair of the claimed articles. By teaching the claimed composition, the claimed properties would have flowed naturally from the prior art. As to the particular curing temperature, there is no indication that the materials disclosed by the references are not capable of being cured at a temperature "as low as" the claimed temperature. This limitation does not provide the curing temperature, and does not distinguish the claimed method from those cited above.

----- NEW CITATIONS -----

PCT/US65/10066  
J24/11/06

## Claims:

1. A method for restoring a damaged rail seat located on a concrete rail tie, which comprises
  - 5 applying a polymeric material comprising a poly(urethane-urea) material to the damaged rail seat located on the concrete rail tie; and restoring the damaged rail seat by curing the polymeric material under ambient temperature and pressure conditions, the polymeric material being substantially sag resistant and maintaining its shape without substantial runoff from the concrete rail tie during said restoring of the damage rail seat, wherein
  - 10 when the rail ties are restored, the rail seat maintains the gauge of a rail assembly under dynamic operating conditions.
2. The method of claim 1, wherein the damage rail seat is restored without requiring the use of non-ambient heat.
- 15 3. The method of claim 1, wherein the damage rail seat is restored without requiring the use of non-ambient pressure.
4. The method of claim 1, wherein the Gel Time of the polymeric material is not more than about five seconds.
5. The method of claim 1, wherein the Gel Time of the polymeric
- 20 material is not more than about one second.
6. The method of claim 1, wherein the Set Time of the polymeric material is sufficient for contouring the restored rail seat in situ without requiring the use of non-ambient heat.
7. The method of claim 1, wherein the polymeric material is cured at
- 25 a temperature as low as 45 °F.
8. The method of claim 1, wherein the modulus of the restored rail seat is increased to a level which will resist compressive loading and maintain the rail gauge of the rail assembly.
9. The method of claim 1, wherein the Elongation of the restored rail
- 30 seat is at least about 10%.

AMENDED SHEET

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10. The method of claim 1, wherein the Shore D (24 hour) Hardness of the restored rail seat is at least about 65.

11. A method for restoring a damaged rail seat located on a concrete rail tie, which comprises

applying a polymeric material comprising a poly(urethane-urea) material to the damaged rail seat located on the concrete rail tie; and

restoring the damaged rail seat by curing the polymeric material under ambient temperature and pressure conditions, the polymeric material being substantially sag resistant and maintaining it's shape without substantial runoff from the concrete rail tie during said restoring of the damage rail seat, the restored rail seat having a modulus which is increased to a level which will resist compressive loading and maintain the rail gauge of the rail assembly.

12. The method of claim 11, wherein the damage rail seat is restored without requiring the use of non-ambient heat.

13. The method of claim 11, wherein the damage rail seat is restored without requiring the use of non-ambient pressure.

14. The method of claim 11, wherein the Gel Time of the polymeric material is not more than about five seconds.

15. The method of claim 11, wherein the Gel Time of the polymeric material is not more than about one second.

16. The method of claim 11, wherein the Set Time of the polymeric material is sufficient for contouring the restored rail seat in situ without requiring the use of non-ambient heat.

17. The method of claim 11, wherein the rail ties having the restored rail seat maintains the gauge of a rail assembly under dynamic operating conditions.

18. The method of claim 11, wherein the polymeric material is cured at a temperature as low as 45 °F.

19. The method of claim 11, wherein the Elongation of the restored rail seat is at least about 10%.

AMENDED SHEET



2-4-14  
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2-4-14

20. The method of claim 11, wherein the Shore D (24 hour) Hardness of the restored rail seat is at least about 65.

21. A method for restoring a damaged rail seat located on a concrete rail tie, which comprises

5 applying a polymeric material comprising a poly(urethane-urea) material to the damaged rail seat located on the concrete rail tie; and

restoring the damaged rail seat by curing the polymeric material under ambient temperature and pressure conditions, the polymeric material being substantially sag resistant and maintaining its shape without substantial runoff  
10 from the concrete rail tie during said restoring of the damage rail seat, without requiring the use of non-ambient heat and pressure, wherein when the rail ties are restored, the rail seat maintains the gauge of a rail assembly under dynamic operating conditions.

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AMENDED SHEET